ER-2 #809 08/06/13 - 08/07/13

Aircraft: ER-2 - AFRC #809 (See full schedule)
Flight Number: 13-9050
Payload Configuration: SEAC4RS
Nav Data Collected: Yes
Total Flight Time: 8.4 hours
Submitted by: Chris Miller on 08/08/13
Flight Segments:

From:	PMD	**To:**	PMD
Start:	08/06/13 17:37 Z	**Finish:**	08/07/13 01:01 Z
Flight Time:	8.4 hours		
Log Number:	132301	**PI:**	Kent Shiffer
Funding Source:	Hal Maring - NASA - SMD - ESD Radiation Science Program		
Purpose of Flight:	Science		
Comments:	This coordinated ER-2/DC-8 flight was the first science flight of the SEAC4RS campaign. The ER-2 take-off was delayed due to late completion of instrument pre-flight activities. All instruments except for eMAS and WAS functioned during the flight. EMAS failed early in the flight due to a malfunction in their digitizer. The WAS team elected not to take samples during this flight. Problems still exist with the NASDAT and INMARSAT systems preventing realtime downlink of CPL data. Work will be done on these before next flight. Altogether, this was a successful flight capturing very good data over northwestern fires and San Joaquin Valley pollution.		

Flight Hour Summary:

	132301
Flight Hours Approved in SOFRS	166
Total Used	164.6
Total Remaining	1.4

132301 Flight Reports

Date	Flt #	Purpose of Flight	Duration	Running Total	Hours Remaining	Miles Flown
08/01/13	13-9048	Check	3	3	163	
08/02/13 - 08/03/13	13-9049	Science	6.5	9.5	156.5	
08/06/13 - 08/07/13	13-9050	Science	8.4	17.9	148.1	
08/08/13	13-9051	Science	7.2	25.1	140.9	
08/12/13	13-9052	Science	7.9	33	133	
08/14/13	13-9053	Science	6	39	127	
08/16/13	13-9054	Science	7.8	46.8	119.2	
08/19/13	13-9055	Science	8.1	54.9	111.1	
08/21/13	13-9056	Science	7.3	62.2	103.8	
08/23/13	13-9057	Science	7.7	69.9	96.1	
08/27/13	13-9058	Science	7.2	77.1	88.9	
08/30/13	13-9059	Science	7.4	84.5	81.5	
09/02/13	13-9060	Science	8.2	92.7	73.3	
09/04/13	13-9061	Science	8.4	101.1	64.9	
09/06/13 - 09/07/13	13-9062	Science	8	109.1	56.9	
09/09/13 - 09/10/13	13-9063	Science	8.1	117.2	48.8	
09/11/13 - 09/12/13	13-9064	Science	7.6	124.8	41.2	

09/13/13	13-9065	Science	8	132.8	33.2
09/16/13	13-9066	Science	8	140.8	25.2
09/18/13	13-9067	Science	7.9	148.7	17.3
09/22/13	13-9068	Science	8.1	156.8	9.2
09/23/13	13-9069	Science	7.8	164.6	1.4

Flight Reports began being entered into this system as of 2012 flights. If there were flights flown under an earlier log number the flight reports are not available online.

Related Science Report:

SEAC4RS - ER-2 #809 08/06/13 Science Report

Mission: SEAC4RS
Mission Summary:

Flight Report – SEAC4RS ER-2, August 06, 2013 Science Flight 1

Prepared by: Richard Ferrare (richard.a.ferrare@nasa.gov)

Purpose of flight: 1) Measure smoke above stratus off California coast using ER-2 remote sensors with coordinated DC-8 underflights , 2) similar to 1) except measure smoke over SW Oregon close to active fires, 3) coordinate pass for air chemistry over central CA Valley

Playbook topics: biomass burning, remote sensing of aerosol in broken cloud field, air chemistry

Flight plan: Proceed up CA central valley then to rosette off the norther CA coast, execute rosette off the coast above DC-8 and smoke over stratus, then proceed to “fishbone” pattern over SW Oregon, coordinated with DC-8 over wishbone pattern with several passes, then return south over central CA valley with dip, then single leg over DC-8 wall pattern north of Fresno. CALIPSO overpass near the Oregon coast ~21:30, should be good Aqua MODIS coverage

Takeoff: 10:38 PDT (17:38 UT)

Duration: 8.4 hours

Notes: delay before takeoff due to ground powercart issues, upper hatch issues

Very successful flight. Well coordinated with DC-8 over smoke runs over CA. Rosette pattern over water had DC-8 execute wall pattern along SE-NW ER2 rosette leg (Fig. 1). Coniderable smoke observed over stratus (see CPL image in Fig. 2) as well as smoke over land from Big Windy and Douglas complex fires (Fig. 3). Smoke was thick enough over land to obscure ground from eye and lidars. CALIPSO imagery shows smoke located just off Oregon coast (Figs. 4, 5). Aqua MODIS AOT imagery shows that ER-2 flew over large AOT values (Fig. 4). Flew several back-and-forth lines over smoke coordinated with DC-5 close to fires in SW Oregon. Flew dip en route to E-W leg north of Fresno. Only flew one E-W leg over Fresno because of time limitations. This leg was colocated with DC-8 wall pattern. Excellent job was done by Stu Broce (pilot) and Dean Neeley (ground-pilot) to

coordinate last minute changes to plan and in execution of plan. (Stu commented that this was the most complex flight he had performed as ER-2 pilot).

Aircraft and instruments: CPL was not able to send data in real-time due to problem interfacing with Iridum. CPL recycled power during first portion of rosette in an attempt to troubleshoot problem. Unfortunately, eMAS only gathered data during first hour of flight. Faulty status light on eMAS gave no indication that eMAS had difficulty. eMAS problems are being worked after flight but will not gather data during transit flight. All other instruments appear to have worked nomimally as far as limited in-flight and quick-look analyses showed. INMARSAT worked for first hour but dropped out gradually after that. Iridium performed somewhat better than during test flight. No aircraft issues.

(see pdf report for figures)

File:
Report_ER2_Flight_06Aug13.pdf
Submitted by: Richard Ferrare on 08/08/13

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